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ABSTRACT

One in a series of 127 performance-based teacher education learning packages focusing on specific professional competencies of vocational teachers, this learning module deals with providing for student safety. It consists of four learning experiences. Covered in the individual learning experiences are the following topics: providing for student safety needs (safety consciousness; general safety regulations; tool and equipment safety; general housekeeping; personal habits; personal protective equipment and apparel; recordkeeping; and national, state, and local agencies); preparing a safety handbook based on applicable local, state, and federal safety laws and student performance objectives; providing for student safety needs and analyzing the performance of other instructors in providing for student safety needs in simulated classroom situations; and providing for student safety in an actual teaching situation. Each learning experience contains an objective, required and optional learning activities, and feedback activities. (MN)

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MODULE
E-5

Provide for Student Safety

Second Edition

Module E-5 of Category E—Instructional Management
PROFESSIONAL TEACHER EDUCATION MODULE SERIES

The National Center for Research in Vocational Education
The Ohio State University

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FOREWORD

This module is one of a series of 127 performance-based teacher education (PBTE) learning packages focusing upon specific professional competencies of vocational teachers. The competencies upon which these modules are based were identified and verified through research as being important to successful vocational teaching at both the secondary and postsecondary levels of instruction. The modules are suitable for the preparation of teachers and other occupational trainers in all occupational areas.

Each module provides learning experiences that integrate theory and application; each culminates with criterion-referenced assessment of the teacher's (instructor's, trainer's) performance of the specified competency. The materials are designed for use by teachers-in-training working individually or in groups under the direction and with the assistance of teacher educators or others acting as resource persons. Resource persons should be skilled in the teacher competencies being developed and should be thoroughly oriented to PBTE concepts and procedures before using these materials.

The design of the materials provides considerable flexibility for planning and conducting performance-based training programs for preservice and inservice teachers, as well as business-industry-labor trainers, to meet a wide variety of individual needs and interests. The materials are intended for use by universities and colleges, state departments of education, postsecondary institutions, local education agencies, and others responsible for the professional development of vocational teachers and other occupational trainers.

The PBTE curriculum packages in Categories A – J are products of a sustained research and development effort by the National Center's Program for Professional Development for Vocational Education. Many individuals, institutions and agencies participated with the National Center and have made contributions to the systematic development, testing, revision, and refinement of these very significant training materials. Calvin J. Cotrell directed the vocational teacher competency research study upon which these modules are based and also directed the curriculum development effort from 1971 – 1972. Curtis R. Finch provided leadership for the program from 1972 – 1974. Over 40 teacher educators provided input in development of initial versions of the modules; over 2,000 teachers and 300 resource persons in 20 universities, colleges, and postsecondary institutions used the materials and provided feedback to the National Center for revisions and refinement.

Early versions of the materials were developed by the National Center in cooperation with the vocational teacher education faculties at Oregon State University and at the University of Missouri – Columbia. Preliminary testing of the materials was conducted at Oregon State University, Temple University, and the University of Missouri – Columbia.

Following preliminary testing, major revision of all materials was performed by National Center staff, with the assistance of numerous consultants and visiting scholars from throughout the country.

Advanced testing of the materials was carried out with assistance of the vocational teacher educators and students of Central Washington State College; Colorado State University; Ferris State College, Michigan; Florida State University; Holland College, P.E.I., Canada; Oklahoma State University; Rutgers University, New Jersey; State University College at Buffalo, New York; Temple University, Pennsylvania; University of Arizona; University of Michigan–Flint; University of Minnesota–Twin Cities; University of Nebraska–Lincoln; University of Northern Colorado; University of Pittsburgh, Pennsylvania; University of Tennessee; University of Vermont; and Utah State University.

The first published edition of the modules found widespread use nationwide and in many other countries of the world. User feedback from such extensive use, as well as the passage of time, called for the updating of the content, resources, and illustrations of the original materials. Furthermore, three new categories (K–M) have been added to the series, covering the areas of serving students with special/exceptional needs, improving students' basic and personal skills, and implementing competency-based education. This addition required the articulation of content among the original modules and those of the new categories.

Recognition is extended to the following individuals for their roles in the revision of the original materials: Lois G. Harrington, Catherine C. King-Fitch and Michael E. Wonacott, Program Associates, for revision of content and resources; Cheryl M. Lowry, Research Specialist, for illustration specifications; and Barbara Shea for art work. Special recognition is extended to George W. Smith Jr., Art Director at AAVIM, for supervision of the module production process.

Robert E. Taylor
Executive Director
The National Center for Research in Vocational Education

THE NATIONAL CENTER FOR RESEARCH IN VOCATIONAL EDUCATION
THE OHIO STATE UNIVERSITY
1960 KENNY ROAD · COLUMBUS, OHIO 43210

The National Center for Research in Vocational Education's mission is to increase the ability of diverse agencies, institutions, and organizations to solve educational problems relating to individual career planning, preparation, and progression. The National Center fulfills its mission by:

- Generating knowledge through research.
- Developing educational programs and products.
- Evaluating individual program needs and outcomes.
- Providing information for national planning and policy.
- Installing educational programs and products.
- Operating information systems and services.
- Conducting leadership development and training programs.

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The American Association for Vocational Instructional Materials (AAVIM) is a nonprofit national institute.

The institute is a cooperative effort of universities, colleges and divisions of vocational and technical education in the United States and Canada to provide for excellence in instructional materials.

Direction is given by a representative from each of the states, provinces and territories. AAVIM also works closely with teacher organizations, government agencies and industry.

INTRODUCTION

As a vocational-technical instructor, you have a personal and professional responsibility for helping your students develop work habits and attitudes that will reduce the chances of their being accidentally injured in the laboratory or on the job—or of their causing injury to a fellow student or worker. Having a sound safety program in your laboratory can develop sound safety habits in students, which can benefit them in the shop or laboratory, on the job, and at home.

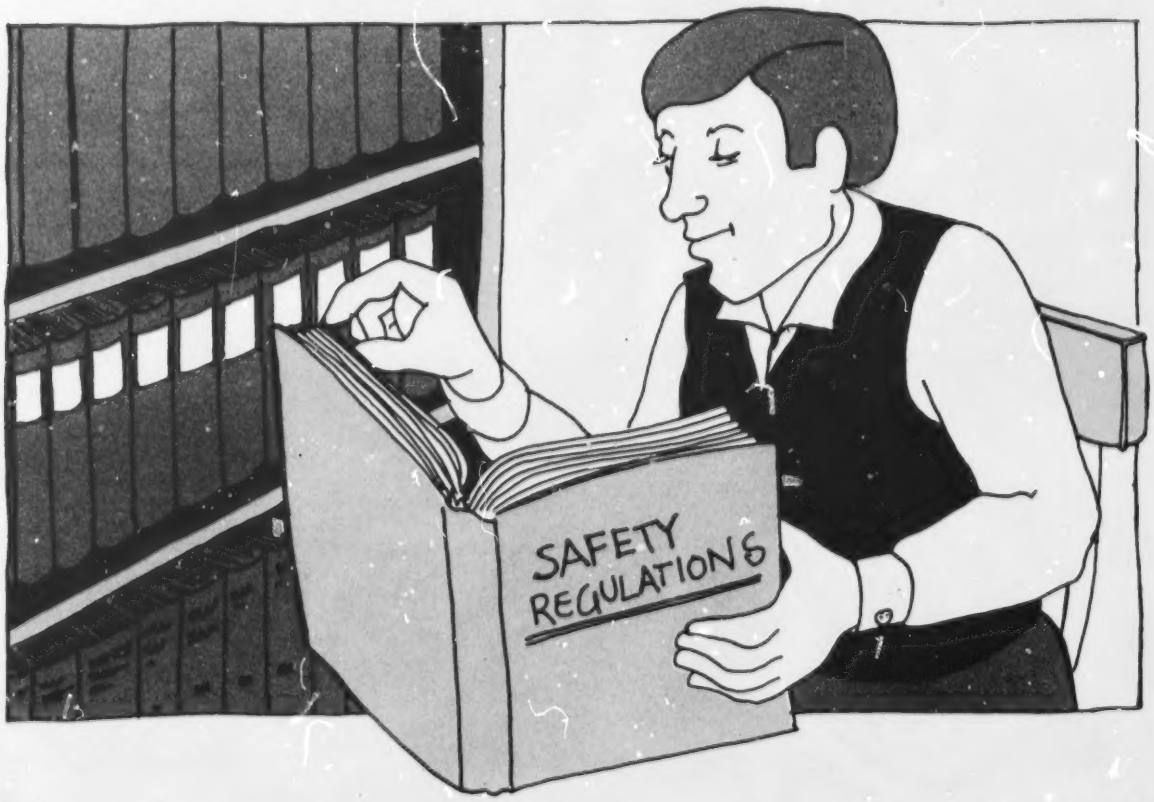
According to International Labour Office statistics, in 1979 in the United States, 6.1 million workers were injured—4,950 of them fatally. As a result of the nonfatal accidents, there were 43.6 million workdays lost.[1] By providing an environment in which students can develop the safety awareness so important in business and industry, you can help reduce these alarming statistics.

1. *1981 Yearbook of Labour Statistics*. Forty-first Edition. Geneva, Switzerland: International Labour Office, 1981.

In both accident prevention and treatment, federal, state, and local regulations are available to help you determine safety procedures for your vocational-technical program. Record-keeping techniques have also been devised that you can use to (1) aid you in organizing your safety instruction, (2) help you provide an accurate report should you be charged with negligence by an injured student, and (3) help you guard against similar accidents in the future.

Such records can also help you monitor your provision of safety instruction. They can provide a handy reference for determining the safety aspects you have covered and those still needing your attention.

The learning experiences in this module are designed to help you provide for the safety needs of your students. They will give you skill in developing appropriate safety skills and attitudes in students and will help you implement effective safety practices in your vocational-technical facilities.



ABOUT THIS MODULE

Objectives

Terminal Objective: In an actual teaching situation, provide for student safety. Your performance will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 47–48 (*Learning Experience IV*).

Enabling Objectives:

1. After completing the required reading, demonstrate knowledge of the techniques and procedures for providing for student safety needs (*Learning Experience I*).
2. Based on applicable local, state, and federal safety laws and student performance objectives in your occupational specialty, prepare a safety handbook (*Learning Experience II*).
3. For simulated school situations, provide for student safety needs or critique the performance of other instructors in providing for student safety needs (*Learning Experience III*).

Prerequisites

To complete this module, you must have competency in developing a lesson plan and demonstrating a manipulative skill. If you do not already have these competencies, meet with your resource person to determine what method you will use to gain these skills. One option is to complete the information and practice activities in the following modules:

- *Develop a Lesson Plan*, Module B–4
- *Demonstrate a Manipulative Skill*, Module C–16

Resources

A list of the outside resources that supplement those contained within the module follows. Check with your resource person (1) to determine the availability and the location of these resources, (2) to locate additional references in your occupational specialty, and (3) to get assistance in setting up activities with peers or observations of skilled teachers, if necessary. Your resource person may also be contacted if you have any difficulty with directions or in assessing your progress at any time.

Learning Experience I

Required

Reference: Occupational Safety and Health Standards, Code of Federal Regulations, Title 29, Parts 1910 and 1926. Washington, DC: Occupational Safety and Health Administration, latest edition.

Optional

Safety resources that you can review for later use in planning and implementing your own specific safety program (see sample 1, p. 7, for specific citations).

Learning Experience II

Required

Local, state, and federal safety laws applicable to your occupational specialty to use in preparing a safety handbook.

Optional

An industrial facility related to your occupational specialty that you can visit.

A resource person to review an outline of your safety handbook.

Learning Experience III

Required

A peer to role-play a student to whom you are presenting a manipulative skill demonstration, and to critique your performance in providing for his/her safety needs. If a peer is unavailable, an alternate activity has been provided

Tools, equipment, and materials (e.g., hand tools, power tools, instruments, machines, appliances, safety apparel) to use in a manipulative skill demonstration.

Optional

A resource person to review the adequacy of your lesson plan.

Videotape equipment for taping, viewing, and self-evaluating your presentation.

Learning Experience IV

Required

An actual teaching situation in which you can provide for student safety.

A resource person to assess your competency in providing for student safety.

General Information

For information about the general organization of each performance-based teacher education (PBTE) module, general procedures for its use, and terminology that is common to all the modules, see About Using the National Center's PBTE Modules on the inside back cover. For more in-depth information on how to use the modules in teacher/trainer education programs, you may wish to refer to three related documents:

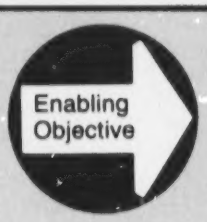
The *Student Guide to Using Performance-Based Teacher Education Materials* is designed to help orient preservice and inservice teachers and occupational trainers to PBTE in general and to the PBTE materials.

The *Resource Person Guide to Using Performance-Based Teacher Education Materials* can help prospective resource persons to guide and assist preservice and inservice teachers and occupational trainers in the development of professional teaching competencies through use of the PBTE modules. It also includes lists of all the module competencies, as well as a listing of the supplementary resources and the addresses where they can be obtained.

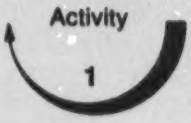
The *Guide to the Implementation of Performance-Based Teacher Education* is designed to help those who will administer the PBTE program. It contains answers to implementation questions, possible solutions to problems, and alternative courses of action.

Learning Experience I

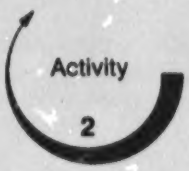
OVERVIEW



After completing the required reading, demonstrate knowledge of the techniques and procedures for providing for student safety needs.



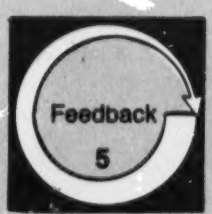
You will be reading the information sheet, Providing for Student Safety Needs, pp. 6–19.



You will be obtaining a copy of *Occupational Safety and Health Standards* and reading those subparts that have implications for your service area.

You may wish to locate and review one or more of the supplementary resources listed in sample 1, p. 7.

You will be demonstrating knowledge of the techniques and procedures for providing for student safety needs by completing the Self-Check, pp. 20–22.



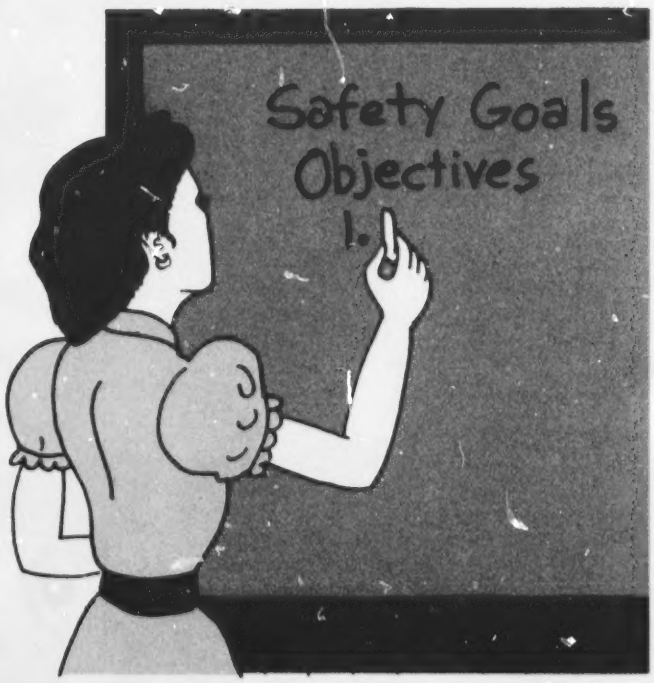
You will be evaluating your competency by comparing your completed Self-Check with the Model Answers, pp. 23–24.

Activity 1

All vocational-technical instructors want their students to finish the training program with the same number of fingers and toes as when they entered. Every teacher is concerned that students entering the occupation are able to work safely. For this to happen, a thorough safety program in the school laboratory or shop is a must. For information on the general practices involved in developing safety knowledge, skills, and attitudes in students, read the following information sheet.

PROVIDING FOR STUDENT SAFETY NEEDS

The success of any given vocational or technical program depends, in part, on the identification of appropriate objectives for that program. Since safety is such a critical element in occupational performance, it is necessary for you to determine those safety-related objectives in each training situation that are vital to the overall safety goals of the program.



Although each occupational specialty and laboratory situation may be unique, the following safety objectives will be common to all programs:

- Form, by your example and by your safety program, a **safety consciousness** in students.
- Instruct students in **accident prevention** by stressing the correct (safe) way to perform a task.
- Provide **safety instruction** in order to help students accomplish the following:
  - **Acquire** a sense of responsibility for their own and others' safety
  - **Understand** that the effective ways of doing things are the safe ways
  - **Recognize** hazardous situations
  - **Use** safe practices in their out-of-school activities
- Instruct students about **what to do** in case of accidents.
- Provide information on general **safety rules.**
- Provide information on specific **safety practices** for using tools and equipment.
- Develop some means for **evaluating** each student's knowledge of, skills in, and attitudes toward safety.

A description of several general techniques and practices found to be successful in achieving these objectives follows. In addition, sample 1 contains a list of references and sources of other material that you may wish to use in planning and implementing your own specific safety program.

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SAMPLE 1

SAFETY RESOURCES

American Vocational Association/National Safety Council Joint Safety Committee. *Let's Teach Safety: A Directory of Classroom Resources.* Arlington, VA: AVA, 1981.

This document provides a comprehensive listing of safety materials available for the vocational education classroom. Resources are categorized by vocational subject area and include ordering information. Safety awareness materials described in the publication include curriculum guides, periodicals, pamphlets, books, films, posters, bibliographies, slide sets, and catalogs. More than 70 suppliers are listed in the back of the book.

Educational Safety Guide Series. Columbus, OH: Ohio Industrial Commission, Division of Safety and Hygiene.

An Educational Safety Guide for Woodworking
An Educational Safety Guide for Hand Tools
An Educational Safety Guide for Eye Protection
An Educational Safety Guide for Industrial Housekeeping
An Educational Safety Guide for Handling Materials Manually and the Prevention of Back Injuries
An Educational Safety Guide for Welding
An Educational Safety Guide for Portable Electric Power Tools
An Educational Safety Guide for Powered Industrial Trucks
An Educational Safety Guide for Air Power Tools
Good Employee Safety

Jacobs, Clinton O., and Turner, J. Howard. *Developing Shop Safety Skills*. Athens, GA: American Association for Vocational Instructional Materials, 1981.

This instructional package on developing shop safety skills includes a paperback text for students, a teacher guide, a student workbook, and a series of six slide/tapes. It covers (1) developing a concern for safety, (2) preparing for safety before entering the shop or work area, (3) preparing for safety at the work station, (4) practicing safety at the work station, and (5) practicing for safety on leaving the shop or work area.

Journals and periodicals related to the needs and interests of vocational educators, available through professional and private organizations.

Articles on safety instruction can be found in the journals and periodicals that you normally read in keeping up to date professionally (e.g., *Agriculture Education*, *Journal of Cooperative Education*, *Journal of Marketing*, *American Journal of Nursing*, *Journal of Home Economics*, *Journal of Business Education*, *Journal of Industrial Education*, *School Shop*, and *American Vocational Journal*).

Smith, William G., and Wren, James E. *Safety Color Coding for the Shop.* Athens, GA: American Association for Vocational Instructional Materials, 1982.

This paperback manual is designed to acquaint teachers and students with the nationally accepted shop safety color coding system. Specific topics covered include safety colors, focal colors, and the application of color coding to piping systems.

A slide/tape or filmstrip/tape presentation is also available.

Wahl, Ray. *A Safety and Health Guide for Vocational Educators. Incorporating Requirements of the Occupational Safety and Health Act of 1970, Relevant Pennsylvania Requirements, with Particular Emphasis for Those Concerned with Cooperative Education and Work Study Programs.* Harrisburg, PA: Pennsylvania Department of Education, Bureau of Vocational and Technical Education, 1977. ED 142 708.

Chapters in this document cover such topics as (1) legal implications of the regulations included in the Occupational Safety and Health Act of 1970; (2) applicability of the regulations to school and staff; (3) detailed descriptions of the provisions and standards of the regulations; (4) definitions, format, guidelines, procedures, and related information needed by the educator to incorporate safety and health into the education program; (5) list of hazards and standards, along with the source of each; and (6) lists of related resource materials, agencies, and organizations. A comprehensive facilities self-inspection checklist, which identifies current safety and health regulations, is also included.

Safety Consciousness

Critics of the effectiveness of safety programs in vocational and technical training produce a very convincing argument that the technology of industry is too fast moving. They assert that this rapid pace makes it difficult for instructors to teach relevant safety skills. The claim is that, by the time safety skills are learned, they have already become obsolete.

While this claim may or may not be true, if instructors and their students have strong safety **attitudes,** their awareness of the need for safety precautions cannot be affected by technological change.

One way to develop this safety consciousness in students is through the teaching of safety skills and habits. The expectation is that, even if some specific safety skills become out of date, attitudes such as a strong concern for accident prevention will transfer to the new work situation. Thus, these attitudes will provide motivation for learning new safety skills. What is essential, in other words, is that students develop a strong concern for safety—a positive attitude toward it.

The way you organize and operate your shop or laboratory will affect the development of strong safety attitudes in your students. If students observe safe organization and use of materials and equipment and if you strictly supervise their activities, they will begin to develop a safety consciousness.

The specific attitudes that need to be developed are those that convince the student that (1) accidents are seldom accidental, (2) accidents are not an inevitable part of everyday life, (3) accidents, for the most part, are caused by people, (4) accidents can be prevented, and (5) everyone is responsible for preventing accidents to him/herself and to others. A student with these attitudes should automatically respond to a potentially hazardous situation by acting in a safe manner.

To allow for the formation of these attitudes, you must be aware of the conditions under which good safety attitudes may be formed. Attitude formation does not occur overnight.[2] It is the result of a long, patient teaching-practice process.

Attitudes, since they are learned, are dependent upon the motivation of the student, but motivation does not just appear. It is fostered through safety education. You can use as many teaching techniques as the situation dictates (e.g., demonstration, illustrated talk, field trip).

Good safety attitudes are not formed by rule-making alone. You must develop safety consciousness not only by effective instruction (direct method), but also through your example (indirect method).

A final condition for attitude formation is that teaching and practice are most effective when done in a positive manner. That is, you should avoid long lists of safety rules, warnings and threats with regard to conduct, or shock techniques. Rules are important, but they should be kept to a minimum.

Your safety program must be designed to convince students that safe conduct is desirable—that working in a safe manner will result in direct, personal, and present benefit to them. A safety program will be much less effective if students are asked to work safely for the good of society or because it will be better for them at some future time.

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2. To gain skill in assessing student attitudes, you may wish to refer to Module D–3, *Assess Student Performance: Attitudes.*

General Safety Regulations

At the beginning of vocational and technical programs, especially those involving laboratory work, students can benefit from instruction in general safety procedures related to that training program. You should carefully prepare the working environment for this initial introduction to safety regulations.

The facility should be obviously safe and well organized in appearance. That is, tools and equipment should be clean and ready for use. Safety guards should be in place. Personal safety apparel should be ready for use. With the working environment carefully organized, the students will be more ready to accept general safety regulations to guide their conduct.

One of the first things you must do is find out if any students have physical conditions that may interfere with their activities in the program or limit their operation of hazardous equipment. Such information may be available from students' school records or from students themselves. Once you have identified problems that certain students may have, you need to take any appropriate safety precautions.

For example, if a student has epilepsy, this condition will probably not affect his/her success in your program. However, you would need to be aware of the extent to which his/her condition is controlled and to plan activities for this student accordingly—ensuring the student's safety without singling the student out as being different.

A student with limited English proficiency may have problems understanding safety instruction or reading safety information posted on laboratory equipment. You must ensure, through careful planning, that your safety program reaches every student, regardless of his/her special needs.[3]

Safety instruction should start right at the beginning of the program. The first safety lesson should cover **general safety procedures, rules, and regulations**. The following safety rules are typical of those that might be used in a laboratory or shop:

- Use only those tools, equipment, and materials designated by the instructor.
- Refrain from loitering in the work areas of the shop or laboratory.
- Report all accidents immediately.
- Report any hazardous conditions to the instructor.
- Return all tools to their designated places.
- Clean work areas before leaving the shop or laboratory.

In a machine shop, the following additional rules might be specified:

- Use machine guards at all times.
- Operate specified hazardous equipment only when the teacher is present.
- Leave the main power line disconnected when the teacher is not present.
- Do not operate machines when other students are close to the area.
- Use appropriate eye protection at all times while in the laboratory or shop.

Other regulations would be necessary in special situations or in specific service areas.

In addition to these general safety rules, the first lesson should include information about the **safety features of the laboratory** itself, for example:

- Where the emergency exits are located and what route to take to get out of the laboratory quickly
- Where the electrical "panic switches" are located and how to use them
- Where the closest fire alarm is located
- How to use any special safety equipment such as showers

In open-entry/open-exit programs, you may need to deal with basic safety instruction individually as each student enters the program. You could develop special learning packages for this purpose, supplemented by the provision of individual and personal attention to each student as he/she goes through the learning experiences.

In some programs, instructors find it necessary to give a special lesson on **fire prevention and control**. The lesson may need to cover the location of the various types of fire extinguishers and the kinds of fires for which each is to be used. The local fire-fighting unit can be asked to come to the school to put on an actual demonstration of the techniques to use in controlling a small fire with an extinguisher. This can make a most dramatic and effective lesson.

The examination you give covering these introductory safety lessons should show 100 percent comprehension by the students. No student should be permitted to work in the laboratory until he or she is completely familiar with the regulations. If necessary, you should repeat any parts of the lesson that students did not understand or remember.

All safety regulations must be thoroughly and consistently enforced. If exceptions are made, the safety program can quickly break down.

3. To gain skill in meeting the safety needs of students with special/exceptional needs, you may wish to refer to Module L–5, *Modify the Learning Environment for Exceptional Students.*

Tool and Equipment Safety

The hands-on approach to skill development requires student use of many tools (hand tools, power tools, instruments, or implements) and a variety of equipment (appliances or machines): scissors and sewing machines, butcher knives and ovens, hemostats and sterilizing apparatus, spark plug wrenches and air wrenches, Exacto knives and typewriters, wire strippers and soldering guns, curling irons and hair driers, hammers and lathes—to name just a very few. In order for students to use these items safely, safety procedures for each tool and piece of equipment should be developed, demonstrated, and enforced.

The first safety step is, again, the provision of a well-ordered laboratory.[4] When students enter the laboratory or shop, the tools must be well organized and properly stored. A specific place must be designated for the storage of each tool when it is not in use. Storage drawers, storage panels, racks, tool cribs, and other such devices can serve this purpose.

All necessary safety guards for power tools and machines should be in place. If needed, power tools and machines should be connected to a main electrical switch and to a "panic switch" that cuts off the power with a tap of the hand.

In addition, heavy machines or appliances should be placed at a safe distance from one another, and a standard working space should be designated around each one. Machine parts could, furthermore, be identified by a standard color coding (i.e., red for electrical parts, orange for moving parts, and green for other nonmoving parts).

The second step is to identify the following for each tool and each piece of equipment: (1) safe operating procedures and (2) emergency procedures. And third, you must select the techniques you will use to teach these procedures to your students.

One technique is the **demonstration**. Before students use any tool or piece of equipment, you should first demonstrate how to use it properly. As part of your demonstration, you should explain both the safe operating procedures and the emergency procedures to be followed.

For example, before students are allowed to use the stove in the home economics laboratory, the instructor should show them how to operate it correctly, explain all safety rules (e.g., do not reach over a lit burner while wearing loosely fitting sleeves), and describe what to do in cases of emergency (e.g., how to extinguish a grease fire).

In demonstrating the use of simple hand tools, you need to be aware of some unique safety problems that may occur. Some students assume that hand tools are not hazardous. Consequently, they develop a casual attitude toward their use. Students must learn that hand tools—improperly used—can cause very serious injury. For example, using a wrench as a hammer or a screwdriver as a chisel can cause injury. Even something as simple as steel wool can cause a deep cut if it is carelessly used.

Students also need to be convinced of the importance of keeping hand tools in good working order. They need to understand that dull, broken, or even improperly adjusted hand tools can be a major cause of minor injuries. In the health occupations, students must learn that some small instruments not only must be kept in good working order; they must be kept sterile as well so as to avoid the risk of patient infection.

In laboratories where tools and equipment have safety guards, students need to realize that use of these guards is vitally important. Current practices in machine guarding can be obtained by consulting with national, state, and local regulatory agencies or by contacting the manufacturers of the item. Sometimes, guards create a bit of inconvenience in the operation of the tool or equipment, so students may want to remove them. This must **never** be allowed to happen.

Equipment powered by gasoline or diesel engines, such as that used in the agriculture programs, may also call for special safety precautions. In those cases, students must learn the proper starting procedures, emergency shut-down techniques,

4. To gain skill in setting up and operating a safe and effective laboratory or shop, you may wish to refer to Module E–8, *Organize the Vocational Laboratory*; and Module E–9, *Manage the Vocational Laboratory.*

and the necessity for adequate ventilation. Protection against noise hazards must receive attention as well.

Following your demonstration, you must **give students an opportunity to prove their ability** to use the tool or piece of equipment properly and safely. You can ask selected students to repeat the demonstration in front of the class and to explain the safety procedures out loud. You can allow students to practice use of the item under your close supervision. And you can require that students pass a performance test, according to specified criteria, before being permitted to use the item on their own.

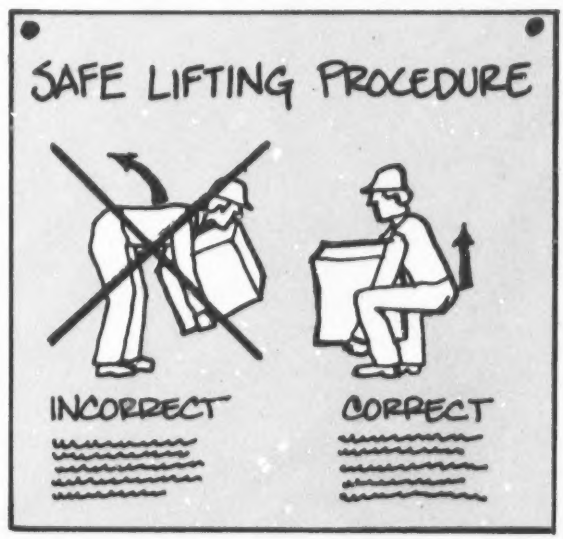
Obviously, introducing your students to all the safety practices necessary in your course or program cannot (and should not) be done in just the first week of class. You should be prepared to present this program on an ongoing basis, using a variety of teaching strategies.

You can also teach the safe use of tools and equipment by **setting an example**. Safety skills are reinforced when students see that you check all tools and equipment before using them and that you habitually follow all safe operating procedures. In other words, no matter how skilled and experienced you are, you would never neglect to use a required safety guard—you would never bypass safety in performing any operations in the laboratory or shop.

Periodic talks by **guest speakers** on various aspects of tool and equipment safety can also be used to reinforce the importance of developing proper safety knowledge, skills, and attitudes. Taking students on **field trips** is another extremely effective technique to use. Field trips provide an opportunity for students to see an actual business or industry in operation and to talk to the employees to get first-hand information about the safety practices followed in using tools and equipment.

Additionally, safety posters, signs, literature, and audiovisuals can assist you in providing a continuous program of safety. Placing a poster above a machine—illustrating what could happen if the safety guards are removed—can go a long way toward keeping your students safety minded. Posting safety rules near the equipment to which they refer is also helpful.

Much of this type of safety material can be obtained free of charge; most machine manufacturers will welcome the chance to assist you. The National Safety Council is another source of such materials.



General Housekeeping

Most school shops or laboratories that are adequately equipped will be the scene of a great deal of activity. The active use of materials and equipment can create a tremendous amount of waste materials and general disorder, which can present a safety hazard if ignored.

Scrap materials on the floor can cause people to slip, trip, and fall. Food and other organic waste can create unsanitary, as well as odorous, conditions. Machines can become overloaded with scrap materials, thus making them unsafe to operate. Accumulations of soiled rags and solvents can be real fire hazards.

Therefore, your safety program is incomplete without some provisions for cleaning up the entire facility before the end of a school day or before the end of a class period. A good safety program should include the following housekeeping practices:

- Provide for sweeping the laboratory or shop floor at least once each class period if necessary.
- Employ specific procedures for keeping the floor free of oil, grease, water, and other materials that could make it slippery.
- Provide for the daily removal of all accumulated sawdust, shavings, hair, metal cuttings, sewing scraps, cooking scraps, and other waste materials.
- Provide designated boxes or bins for usable scrap materials.
- Provide adequate brushes, dust cloths, and cleaning solutions for the maintenance of equipment.

Poor housekeeping can be very disruptive to the safety program. You should take every opportunity to point out the value of good housekeeping and to emphasize that it is everyone's responsibility (i.e., the school administrators, the instructor, the students, and the custodian). You should reinforce the idea that organized housekeeping helps students to (1) develop a safety consciousness, (2) develop a sense of personal responsibility for a safe environment, and (3) avoid accidents.

Remember, too, that you are a critical component of the safety program. All through the laboratory period, you provide a model of conduct that students will copy. Naturally, that model should be the best one possible. You can set an example by moving a tool to store it properly, picking up a piece of scrap material from the floor, adjusting a safety guard on a machine, and putting on a pair of gloves when you are about to handle a hot item.

You can involve students by asking one student to check a tool for safe condition, reminding another student about a safety rule for the machine he/she is using, or asking a discreet question about a potential hazard. All the while, you should be (1) observing students to be sure they are working safely and (2) listening for any sounds that would indicate that a machine is functioning improperly.

Personal Habits

In addition to stressing the importance of observing safety regulations related to tool and equipment use, you need to emphasize the safety requirements related to proper grooming and dress. Students should be aware of the hazards of improper grooming and dress and should begin to take appropriate safety precautions **automatically**.

Depending on the requirements of the particular laboratory or shop, students should automatically remove neckties, wristwatches, and rings; roll up shirt sleeves above the elbow; and dress with the appropriate protective equipment and safety devices when preparing to work.

You should quickly check each student for **safety grooming** before permitting any work. Does everyone have his/her sleeves rolled up? Is jewelry removed? Is long hair tied back? Are ties removed or tucked inside the shirt? One way to reinforce these safety practices (at least in secondary schools) is to have each student check another student to his/her right or left to identify any lack of good safety grooming and/or protective apparel. The amount of attention given to these practices depends, to an extent, on the grade level of the students.

Personal Protective Equipment/Devices/Apparel

Protective equipment, devices, and apparel are designed to protect against an accident or unusual safety hazard. They cannot and should not be expected to substitute for the elimination of safety hazards in the laboratory. In other words, you should first do everything you can to minimize hazardous laboratory conditions. You can then use protective devices and apparel to further protect students at the point of work, if required. For example, exhaust fans should be used in the shop to get rid of fumes, gases, and dust to the greatest extent possible. Then, if necessary, students can be required to wear respirators to filter out the last vestiges of harmful material.

Eye Protection

The importance of preserving good eyesight is emphasized from early childhood. This emphasis is especially important in laboratories where a variety of activities could be hazardous to the unprotected eyes. In any laboratory where machines or materials that are potentially hazardous to the eyes are being used, every student should wear eye protection at all times.

Following are descriptions of the various kinds and functions of eye protection devices found in vocational and technical programs. For general eye protection, it is best for each student to own his/her own pair of goggles, rather than for the school to provide them.

Spectacle goggles. Spectacle goggles look like prescription glasses and are extremely useful for impact protection. They can be worn with ease and comfort by most people. Manufacturers have special designs with cable-type temples to provide flexibility in adjusting the glasses to long and short temple lengths.

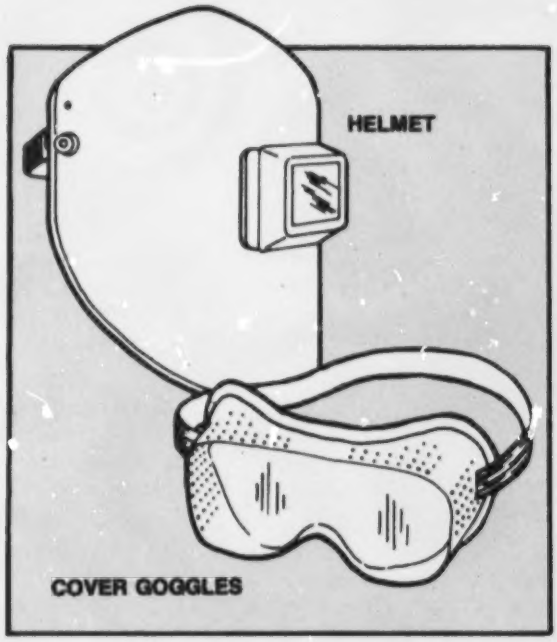
Safety shields attached to the goggles provide additional protection. These shields, attached to both sides of the goggles, are usually made from a plastic material. They can be permanently or temporarily attached, and they are either solid or perforated for ventilation.

Prescription glasses are now generally made with tempered glass lenses that act as safety glasses. If there is any doubt about the protection offered by a particular pair of glasses, they can be checked by an optician.

Cup-goggles. Cup-goggles provide even greater eye protection. A headband is used to fit the cups securely around the face bone surrounding the eye. Cup-type goggles are recommended for operations where dust and chips are produced, such as grinding-type processes.

As with most tight-fitting eye apparatus, cup-goggles have a tendency to fog. The safety protection provided by these goggles, however, far outweighs this inconvenience. The lenses on the cup-goggles are produced in a wide range of colors for shielding one's eyes from the bright light and sparks produced by gas welding.

Face shields. A useful eye protection device for light impact is the face shield. This device is made of a plastic shield that covers the entire face and is attached with head gear or a headband. Its use is required, in addition to the use of safety glasses, in some industries where molten metals and chemicals are involved.



Helmets made of fiberglass with a small rectangular viewing window are used for electric welding and for other operations where there is danger from heat, light, or impact. For some uses, the window glass may be transparent, but for welding, the correct type of very dark glass must be selected.

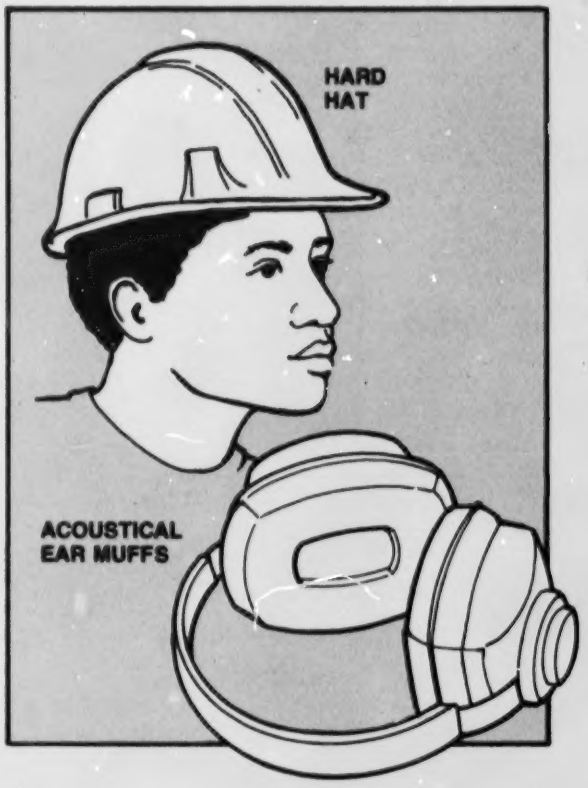
Cover goggles. When uncorrected vision will not meet vision standards for work, students must wear their regular prescription glasses at all times. If additional protection is necessary, cover goggles can be worn over regular eyeglasses. These goggles are made of durable soft plastic material, with side perforations for ventilation and a rubber-type headband.

Head and Ear Protection

Although head and ear injuries are not common in the school laboratory or shop, certain activities warrant the use of head and ear protection. For example, the safety hat is a required protective device in most building construction laboratories. Ear protection is essential in woodworking shops in which power saws and planers are used, as well as in certain aircraft engine shops where students are subject to constant, intense sound ranging upward of 100 decibels.

Head protection. A safety hat with a full all-around edge is most often used. The cap style (less protection around the edge) is becoming increasingly popular, especially among supervisors on the job. The "hard hat" is usually water resistant, noncombustible, and a nonconductor of electricity. The cradle and sweat band inside the hat should be readily replaceable for cleaning purposes.

Ear protection. While simple wax or plastic ear plugs may be used, the best ear protection devices are acoustical ear muffs that completely surround the ear. A range of types is available to meet the needs of various kinds of noise problems.

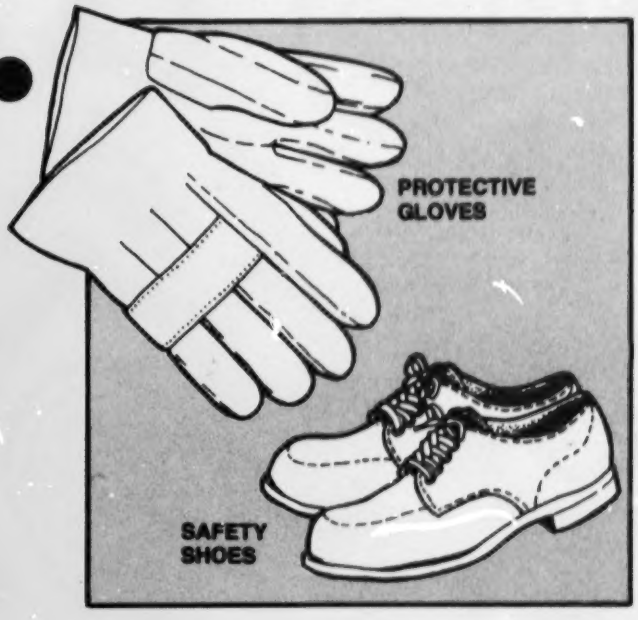


Hand, Foot, and Leg Protection

Hand, foot, and leg protection is generally designed for protection from minor injuries. You should remember, however, that injuries to the fingers are the most frequent kind of injury in school laboratories and shops.

Gloves. Hand protection from blisters caused by friction can be provided by gloves made of inexpensive materials such as canvas or heavy cotton. When heavier work or heat is involved, and more protection is required, leather or asbestos gloves can be worn. Some operations call for the use of mittens, while for welding, a gauntlet style of glove is essential. Heavy mittens, as well as jackets, should be available to students who must work in cold storage lockers.

Shoes. Safety shoes with steel box toes are recommended for foot protection in some laboratories and shops. Modern versions of safety shoes are good looking and usually cannot be distinguished from ordinary shoes. Many workers are required to wear shoes that have metal inner soles in addition to the metal box toe. Electricians, however, should wear shoes with special nonconductive soles.



Respiratory Devices

A very useful piece of protective equipment sometimes needed in the school laboratory or shop is the filter respirator. This device consists of a face piece that filters fumes and dust out of the air as it is inhaled. Other, more sophisticated filters are available to filter out more serious air contaminants.

Miscellaneous Personal Protective Equipment

There are other, less specific types of wearing apparel that may be useful in shop or laboratory situations (e.g., aprons, coveralls, and shop coats). This apparel is used to give general body protection against grease, dust, hot metal splashes, and so on. The material used generally is a rugged cloth that can withstand long periods of washing and wearing.

As with ordinary clothing, this protective apparel can create additional hazards when not properly fitted. Long sleeves and loose apron strings, for example, can create dangerous situations around machinery and appliances with moving parts. Therefore, you should see to it that each student wears properly fitted apparel.

Protective devices, equipment, and apparel are available in a wide range of materials and styles, and they vary in quality. The important point to remember is that there are devices to protect all parts of the body and devices for all types of jobs. It is your responsibility to (1) know the devices required by law, (2) select the best possible device for each situation, (3) assist students in developing a positive attitude about their use, and (4) demonstrate their proper use and maintenance.

Information on what is required by law is usually available from the state and local vocational education offices. As with most safety practices, requirements for personal protective devices may vary from state to state.

Record Keeping

Record keeping in a safety program involves recording the safety instruction you provide and any accidents that occur—minor as well as major. A record of safety instruction serves a twofold purpose. First, it attests to how well you have succeeded in providing students with a safe learning and working environment. This record may be especially valuable if you are charged with negligence by an injured student.

Second, a record of safety instruction can serve as a handy reminder of which safety aspects have been covered and which still need attention. You should review this record regularly to determine whether adequate safety instruction has been offered.

The beginning teacher may be in a more vulnerable position concerning legal liability than is an experienced teacher, simply because the courts may tend to assume that the less experienced teacher is more likely to be less thorough than the teacher of long standing. It is particularly important in this case to maintain an accurate record of safety instruction given and the results of students' tests.

A convenient way to record safety instruction is to keep, in your plan book, a list of the student safety quizzes and performance tests to be administered. You can then test students on their **knowledge** of safety procedures after each new operation is introduced, and record the results. Those students who complete the quiz with 100 percent accuracy may then be allowed to perform the operation—with supervision.

By then monitoring student **performance** and evaluating performance using a safety criteria checklist, you can be sure that all students who are performing the operation in the laboratory know and use the correct procedures. You will also be able to identify those students who need additional help. You can then ensure that they work on those aspects of safety that they had difficulty with until they are able to pass the quiz and perform safely.

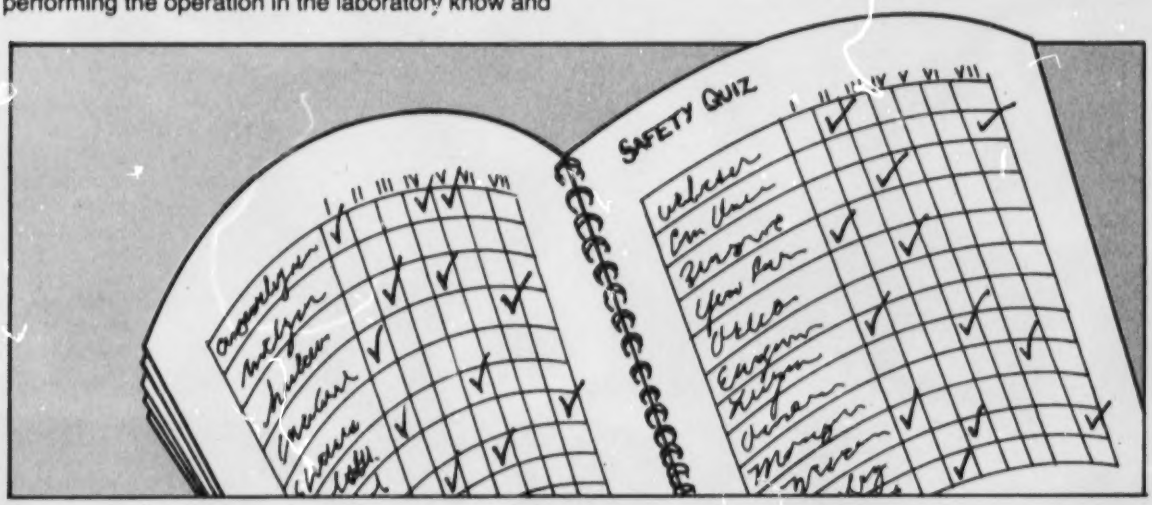
Some teachers require students to sign and date each safety quiz or performance test upon achieving 100 percent. They then keep the quizzes and tests on file. This seems to reinforce the seriousness of safety instruction, and it provides additional support for the instructor should liability cases occur.

In a competency-based instructional program, there may be some learning packages (modules, learning guides) devoted to safety. It would be wise for the instructor to file each student's completed assessment forms for those learning packages, if this is the case.

Samples 2 and 3 are forms that you could use to record safety instruction.

Most schools have a specific policy that all accidents, regardless of severity, should be reported. This policy is especially important in vocational-technical education because of the contribution that accurate reporting can make to safety programs.

Records of laboratory-related accidents can also assist you in improving the safety program, which can sometimes prevent more serious accidents from occurring. For example, a record showing that several students got caught on a doorstop should be enough proof that the doorstop is a menace to safety and should be moved or repaired. Most school systems will have accident forms available for this purpose.



SAMPLE 2

SAFETY FORM

SAFETY QUIZZES

UNIT: Power Woodworking Tools

STUDENT	Quiz #1: Radial Arm Saw	Quiz #2: Lathe	Quiz #3: Drill Press	Quiz #4: Table Saw	Quiz #5: Band Saw	Quiz #6: Disc Sander	Quiz #7: Electric Plane
Larry O'Reily	✓	✓	✓				
Geraldine Lincoln	✓		✓				
Frank Antonnelll		✓	✓				
Karen Brozak	✓	✓	✓				
Joe Arnold	✓						
Rosa Lopez	✓	✓					

NOTE: This format could be incorporated in the standard teacher's plan book

SAMPLE 3

SAFETY FORM

SAFETY RECORD

Student's Name _____ **Date** _____
Last First Middle

Date of Birth _____ **Address** _____
Day Month Year

School _____ **Type of Laboratory** _____
Food Preparation, Wood, etc.

Safety Instruction	Date	Student Demonstration	Date	Name of Test	Date	Test Score

List of Equipment Student Can Operate Safely

_____

_____

_____

_____

_____

_____
Teacher's Signature Date

National, State, and Local Agencies

The shop or laboratory instructor has a unique opportunity to draw on many national, state, and local agencies for assistance in determining regulatory safety standards, as well as in keeping up to date on new safety equipment and devices. Such agencies can be extremely helpful to you—without cost to students or school—by providing unpublished materials, information on technical aspects of safety, and model illustrations of new safety apparel.

The following is a small sample of the multitude of organizations ready to help to make our environment safe. They range in kind from public to private, nonprofit organizations.

National Agencies

- American Society of Safety Engineers, Chicago, Illinois
- Association of Casualty and Surety Companies, New York, New York
- National Board of Fire Underwriters, New York, New York
- National Safety Council, Chicago, Illinois
- Underwriters' Laboratories Inc., Chicago, Illinois
- Occupational Safety and Health Administration, Washington, DC

State Agencies

- Division of Safety Inspection
- Division of Industrial Safety
- Department of Labor
- Division of Health & Hygiene

Local Agencies

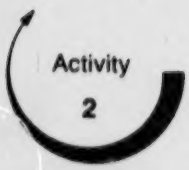
- American Red Cross
- Insurance agencies
- Community safety council

Agencies such as these can assist you in identifying safety laws and regulations that are unique to your occupational specialty and geographic location.

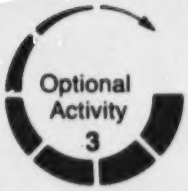
In addition, instructors in many vocational-technical service areas should have access to a copy of *Occupational Safety and Health Standards*, which is made available by the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor. This publication sets forth all federal rules and regulations regarding occupational safety and health standards.

It is vital that you are knowledgeable about all pertinent information contained in this publication that relates to your occupational area. These rules and regulations should be observed for your personal safety and the safety of your students. Some of the areas covered in this reference include the following:

- Walking-working surfaces
- Powered platforms, lifts, and vehicle-mounted work platforms
- Occupational health and environmental control
- Hazardous materials
- Personal protective equipment
- Medical and first aid
- Compressed gas and compressed air equipment
- Machinery and machine guarding



Obtain a copy of *Occupational Safety and Health Standards*. This publication is available free of charge from the U.S. Department of Labor or from the Occupational Safety and Health Administration office in your state. Read the rules and regulations contained in those subparts that relate to your service area. If you are presently teaching, determine if your shop or laboratory complies with federal guidelines.



Sample 1, p. 7, lists a number of resources that you might wish to use in providing safety instruction for your students. Some of these resources are designed to be used by students; some are designed to help you in planning your safety program; and some can be used by both you and your students. To better prepare yourself to provide for student safety, you may wish to locate and review one or more of these resources.

The following items check your comprehension of the material in the information sheet, Providing for Student Safety Needs, pp. 6–19. Each of the seven items requires a short essay-type response. Please explain fully, but briefly.

SELF-CHECK

1. Discuss the reasons why a good safety attitude need not be affected when old safety skills and knowledge become obsolete.

2. What are some of the aspects of a safety program that should be taught at the very beginning of a vocational program?

3. Explain why personal protective devices are **not** considered to be a primary defense against injury.

4. How can accident reports improve the safety program?

5. What are some indicators of a potentially strong safety program?

6. Of what benefit is a record of safety instruction?

7. What purposes can safety posters serve in a school shop or laboratory?

Compare your written responses to the self-check items with the model answers given below. Your responses need not exactly duplicate the model responses; however, you should have covered the same **major** points.

MODEL ANSWERS

1. A good safety attitude consists of an awareness of the need for safety and a readiness to act in a safe manner. This attitude—which is formed by teacher example and by laboratory activities that teach students how to conduct themselves safely around the tools, materials, and equipment of the occupation—becomes a habit. Once it is formed, changes in given safety skills resulting from innovations in equipment, tools, or materials should not weaken one's attitude toward safety.

2. General kinds of safety information should be given at the beginning of a program. This information should cover all major parts of the safety program. The following questions should be answered:

   - Under what conditions may hazardous equipment be operated?
   - What kind of conduct is appropriate in and around the shop or laboratory?
   - What should be done in case of an accident?
   - How should tools be checked in and out?
   - What color codes are used on machines?
   - What general housekeeping rules should be observed?
   - What is the proper use of tools?
   - What is appropriate eye wear and when should it be worn?
   - What are the safety features of the laboratory?

3. Personal protective devices should be considered only as a **back-up** defense; the primary defense should be the provision of the best safety system possible. The first goal of the safety program should be to **eliminate** or **reduce** danger, not just to protect students against it. You should not provide students with fireproof aprons to protect them against flammable liquids **if** nonflammable liquids are available. The primary source of prevention, then, should be to eliminate the flammable liquids.

4. The best safety program can only eliminate, reduce, or protect against known or probable hazards. Effort should be made to identify those accidents that stem from unknown or unsuspected hazards. The accident report can provide this information and other related facts. By identifying unsuspected hazards and then eliminating or guarding against them, you can improve your safety program.

5. The effectiveness of a safety program can be determined by many factors, depending on the nature or kind of vocational-technical program in which it functions. Some general or universal indicators of an effective program include the following:

   - It provides an opportunity to practice safety through manipulative activity.
   - It provides for teaching about the hazards of tools and equipment.
   - It provides for individual, as well as group, instruction.
   - It helps students prepare for safe conduct in and out of school.
   - It has provisions to emphasize accident prevention as practiced in industry.

6. A record of safety instruction can serve in the following ways: (1) it can assist a teacher with evidence of safety instruction when he or she is involved in a liability suit; (2) it is an excellent resource for the teacher who is attempting to revise the safety program; and (3) it serves as a handy reference for teachers in identifying areas that need immediate or additional attention.

7. Safety posters hanging near machines, appliances, and other equipment in the school laboratory can serve as attention-getters. A cartoon illustration of what happens when a safety practice is ignored can serve as a quick reminder of the importance of that practice.

   Posters can also be used as effective teaching aids. As you present safety instruction, illustrations can help emphasize a major point of the lesson.

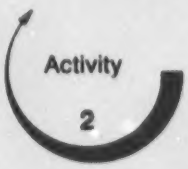
Level of Performance: Your written responses to the self-check items should have covered the same major points as the model answers. If you missed some points or have questions about any additional points you made, review the material in the information sheet, Providing for Student Safety Needs, pp. 6–19, or check with your resource person if necessary.

Learning Experience II

OVERVIEW

Based on applicable local, state, and federal safety laws and student performance objectives in your occupational specialty, prepare a safety handbook.

You will be identifying local, state, and federal safety laws applicable to your occupational specialty.



You will be compiling a list of the personal and equipment safety devices required in meeting student performance objectives in your occupational specialty.

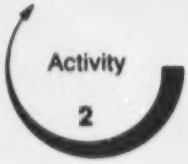
You will be preparing a safety handbook for your area of occupational specialty.

You may wish to conduct a field trip to an industrial facility related to your occupational specialty to observe safety practices and to discuss your handbook project with its safety engineer.

You may wish to have your resource person review an outline of your handbook before you proceed with its development.

You will be evaluating your competency in preparing a safety handbook, using the Safety Handbook Checklist, p. 29.

Examine local, state, and federal safety laws to identify the **personal** and **equipment** protective devices required for your area of occupational specialty. These may be available through your resource person. If not, write or call your state department of industrial safety to obtain a list of these applicable laws or to find out the appropriate source to contact for the same information. (Some states publish safety laws in the form of safety manuals or safety handbooks.)



Obtain a curriculum guide, course of study, or course outline for your occupational specialty, examine the student performance objectives it contains, and then compile a list of the personal and equipment safety devices required in meeting those objectives.

Using the information obtained from examining safety laws and the list of safety devices you generated, prepare a safety handbook for your occupational specialty. Your handbook should also include all the general safety rules and practices you will incorporate into your safety program.

If you wish to see a safety program in action before completing your handbook, you may wish to arrange through your resource person to visit an industrial facility related to your occupational specialty to observe its safety program. Your arrangements may include requesting a conference with the company's safety engineer to discuss safety practices, rules, and regulations observed at the facility. During this conference, you could also discuss your handbook project with the safety engineer and seek any suggestions he/she may have regarding the contents of your handbook.

If you wish to discuss the proposed content of your handbook before it is completed, plan a detailed outline and ask your resource person to review it before you begin the final preparation.

After you have developed your handbook, use the Safety Handbook Checklist, p. 29, to evaluate your work.

NOTES

SAFETY HANDBOOK CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

	LEVEL OF PERFORMANCE			
	N/A	No	Partial	Full
The information in the handbook:				
1. conformed to federal safety laws	☐	☐	☐	☐
2. conformed to state safety laws	☐	☐	☐	☐
3. conformed to local safety laws	☐	☐	☐	☐
The handbook:				
4. specified safe conditions in the laboratory with respect to floors, aisles, lighting, ventilation, exits, and signs	☐	☐	☐	☐
5. included procedures to follow in the event of fire	☐	☐	☐	☐
6. specified regulations pertaining to apparel, such as safety glasses, helmets, aprons, shoes, gloves, loose clothing, and jewelry	☐	☐	☐	☐
7. specified safe operating conditions for equipment, such as guards, control switches, and proper maintenance	☐	☐	☐	☐
8. specified requirements for teacher supervision	☐	☐	☐	☐
9. specified general safety rules to govern conduct in the laboratory, such as:				
a. housekeeping	☐	☐	☐	☐
b. using tools and equipment (appliances and machines)	☐	☐	☐	☐
c. returning tools to proper places	☐	☐	☐	☐
10. included procedures to follow in case of an accident	☐	☐	☐	☐

Level of Performance: All items must receive FULL or N/A responses. If any item receives a NO or PARTIAL response, review the material in the information sheet, Providing for Student Safety Needs, pp. 6–19, and/or the local, state, and federal safety laws applicable to your occupational specialty, revise your handbook accordingly, or check with your resource person if necessary.

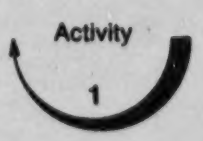
NOTES

Learning Experience III

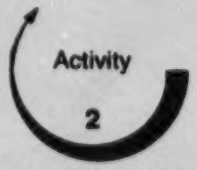
OVERVIEW

For simulated classroom situations, provide for student safety needs or critique the performance of other instructors in providing for student safety needs.

NOTE: The next nine items involve role-playing with a peer. If a peer is not available to you, proceed directly to the alternate activity, which follows.



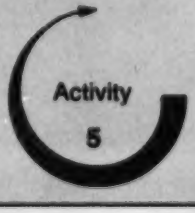
You will be selecting a student performance objective in your occupational specialty that lends itself to the demonstration of a manipulative skill and student practice of that skill.



You will be selecting, modifying, or developing a lesson plan designed to achieve that objective using a manipulative skill demonstration, giving particular attention to the safety aspects involved in performing that skill.

You may wish to have your resource person review the adequacy of your plan.

You will be selecting, obtaining, or preparing the tools, equipment, and materials needed for your demonstration.



You will be presenting the lesson to a peer and supervising his/her practice in performing the manipulative skill.

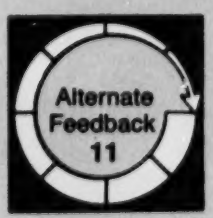
You may wish to record your demonstration on videotape for self-evaluation purposes.

You will be documenting the safety practices covered in your demonstration.

Your competency in providing for student safety needs will be evaluated by your peer, using the Demonstration/Supervision Checklist, p. 35.

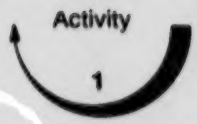
If you videotape your demonstration, you may wish to evaluate your own performance, using the Demonstration/Supervision Checklist, p. 37.

You will be reading the Case Studies, pp. 39–41, and critiquing the performance of the teachers described.

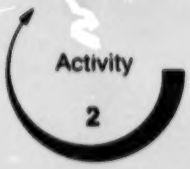


You will be evaluating your competency in critiquing the teachers' performance in providing for student safety needs by comparing your completed critiques with the Model Critiques, pp. 43–44.

NOTE: The following activities involve role-playing with a peer. If a peer is not available to you, turn to p. 39 for an explanation of the alternate activity.



Select a student performance objective in your occupational specialty that could be achieved, at least partially, by a manipulative skill demonstration and student practice. (In a real-world situation, you start with an objective and then select the most appropriate materials and teaching methods. In this practice situation, however, you need to select an objective that lends itself to demonstrating a manipulative skill.)



Prepare a detailed lesson plan that includes an explanation of how the manipulative skill will be demonstrated and how the safety needs of students will be provided for. Instead of developing a lesson plan, you may select a lesson plan that you have developed previously and adapt that plan so that it includes a manipulative skill demonstration that provides for student safety needs.

You may wish to have your resource person review the adequacy of your plan. He/she could use the Teacher Performance Assessment Form in Module B–3, *Develop a Lesson Plan*, as a guide.

Based on your lesson plan, select, obtain, or prepare the tools, equipment, and materials you will need to give your demonstration.

In a simulated situation, present your manipulative skill demonstration to a peer and supervise his/her practice of the skill. The peer will serve two functions: (1) he/she will role-play a student to whom you are presenting your demonstration, and whose practice you are supervising, and (2) he/she will evaluate your performance.

If you wish to self-evaluate, you may record your performance on videotape so you may view your own demonstration and subsequent supervision of the student at a later time.

Using the safety form shown in sample 3 on p. 18, or one in use in your occupational specialty, record the safety practices covered in your demonstration and any other **applicable** information called for by the form (i.e., if the form calls for recording safety quiz scores, you will obviously not be able to provide this information).

Multiple copies of the Demonstration/Supervision Checklist are provided in this learning experience, pp. 35–37. Give a copy to the peer before making your presentation in order to ensure that he/she knows what to look for in your demonstration/supervision. However, indicate that, during these activities, all attention is to be directed toward you and that the checklist is to be completed **after** the activities are finished.

If you videotaped your performance, you may wish to self-evaluate using a copy of the Demonstration/Supervision Checklist, pp. 35–37.

DEMONSTRATION/SUPERVISION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

	LEVEL OF PERFORMANCE			
	N/A	No	Partial	Full
1. During the manipulative skill demonstration, the environment was safe with respect to:				
a. the condition of tools and equipment	☐	☐	☐	☐
b. materials (e.g., liquids, metal, wood)	☐	☐	☐	☐
c. condition of the demonstration area	☐	☐	☐	☐
d. placement of the student	☐	☐	☐	☐
e. lighting and ventilation	☐	☐	☐	☐
2. Safety practices specific to performing the manipulative skill were covered	☐	☐	☐	☐
3. The teacher pointed out known safety hazards associated with the manipulative skill	☐	☐	☐	☐
4. The teacher used appropriate machine safety guards	☐	☐	☐	☐
5. The teacher used appropriate personal protective equipment and devices	☐	☐	☐	☐
6. The teacher explained why each personal safety device was used	☐	☐	☐	☐
7. The teacher encouraged questions about the safety aspects of the demonstration	☐	☐	☐	☐
8. The teacher asked key questions about the safety features of the demonstration	☐	☐	☐	☐
9. The teacher avoided any shortcuts in safety practices	☐	☐	☐	☐
10. The teacher ensured that the student followed correctly all safety practices involved in performing the skill	☐	☐	☐	☐
11. The teacher recorded the safety instruction provided	☐	☐	☐	☐

Level of Performance: All items must receive FULL or N/A responses. If any item receives a NO or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

NOTES

DEMONSTRATION/SUPERVISION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

	LEVEL OF PERFORMANCE			
	N/A	No	Partial	Full
1. During the manipulative skill demonstration, the environment was safe with respect to:				
a. the condition of tools and equipment	☐	☐	☐	☐
b. materials (e.g., liquids, metal, wood)	☐	☐	☐	☐
c. condition of the demonstration area	☐	☐	☐	☐
d. placement of the student	☐	☐	☐	☐
e. lighting and ventilation	☐	☐	☐	☐
2. Safety practices specific to performing the manipulative skill were covered	☐	☐	☐	☐
3. The teacher pointed out known safety hazards associated with the manipulative skill	☐	☐	☐	☐
4. The teacher used appropriate machine safety guards	☐	☐	☐	☐
5. The teacher used appropriate personal protective equipment and devices	☐	☐	☐	☐
6. The teacher explained why each personal safety device was used	☐	☐	☐	☐
7. The teacher encouraged questions about the safety aspects of the demonstration	☐	☐	☐	☐
8. The teacher asked key questions about the safety features of the demonstration	☐	☐	☐	☐
9. The teacher avoided any shortcuts in safety practices	☐	☐	☐	☐
10. The teacher ensured that the student followed correctly all safety practices involved in performing the skill	☐	☐	☐	☐
11. The teacher recorded the safety instruction provided	☐	☐	☐	☐

Level of Performance: All items must receive FULL or N/A responses. If any item receives a NO or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

NOTES

The following case studies describe how five vocational-technical instructors provided for the safety needs of their students. Read each of the case studies and then explain in the space provided (1) what safety precautions were followed, (2) what safety precautions were overlooked, and (3) what additional precautions the instructor should have taken.

CASE STUDIES

1. Mr. Wymer, the technical education instructor, walked into his laboratory and found a ten-gallon can of benzine leaking onto the floor. As his first class arrived, he cautioned them to keep away from that area. He instructed three of his students to mop the benzine off the floor using cleaning rags. Two other students picked up a box from the custodian to store the soaked cleaning rags. When the floor was clean, Mr. Wymer placed the box in the tool room and resumed the scheduled activities.

2. To allow students the fullest benefit of skill practice, Mrs. Keyes, the industrial home economics teacher, gave her students permission to work until the end of the class period. She announced that she would be responsible for cleaning the laboratory before the beginning of the next class period.

3. After giving a demonstration on the safe way to weld hard-surface material to a plow share, Mr. Weldon, the agriculture teacher, told his students to practice performing the skill until he returned from downtown. Mr. Weldon had decided that, since his supplies were ready and downtown was only minutes away, he could get back in plenty of time to meet his next class.

4. As Ms. Barnes's industrial arts class began, two of her more capable students were eager to complete an advanced project they had started. To continue their project, they needed to use the table saw. Ms. Barnes did not remember if she had given specific instruction on the safe use of this machine tool, but the two students insisted that they knew what to do. Ms. Barnes gave them her permission and proceeded with instruction for the rest of the class.

5. Mr. Barker was reading a local T & I journal and discovered that there were new safety practices recommended for workers in his specialty. Without delay, he wrote to a couple of local industries for more details. At the same time, he suspended all laboratory activities until the new material arrived.

NOTES

Compare your written critiques of the teachers' performance with the model critiques given below. Your responses need not exactly duplicate the model responses; however you should have covered the same **major** points.

MODEL CRITIQUES

1. Mr. Wymer exercised good judgment when he instructed his students to keep away from the area where the benzine was leaking and stopped all activities. His decision indicates that he was aware of the potential danger created by the leaking container. By halting all activities, he lessened the chances of igniting the flammable liquid.

   However, cleaning the floor did not eliminate the hazard. Placing the soaked rags in an open box was very dangerous, because benzine vapor is just as hazardous as the liquid.

   Mr. Wymer should have suspended laboratory activity; explained to his class the potential danger of an exposed, flammable liquid; and discussed each cleaning step as he went along. Before resuming the scheduled activities, he should have (1) repaired or replaced the leaking container, (2) wiped the benzine off the floor with cleaning rags, (3) placed the cleaning rags in a self-closing, metal container, and (4) ventilated the entire laboratory.

2. It appears that Mrs. Keyes was aware that keeping the laboratory clean is an important part of maintaining a safe environment. This aspect was probably stressed in her teacher training or in her own vocational training. On the other hand, Mrs. Keyes overlooked the importance of helping her **students** form the same safety habits.

   Insisting that each student clear his/her work area and return all tools, materials, and equipment to their designated places would have been the best decision. At one point or another, she should also have explained the benefit of good housekeeping and the specific activities involved.

3. Assuming that Mr. Weldon was thorough in his demonstration, he probably reinforced the following safety practices: (1) correct personal dress for welding (e.g., removing jewelry and ties, and rolling up long sleeves); (2) correct selection and use of personal protective equipment (e.g., welding jackets, aprons, and goggles); (3) correct safety check of welding equipment, (4) correct procedure in performing the welding operation; and (5) correct housekeeping procedure.

   However, when he left the students to practice without supervision and left the laboratory area without stopping the operation of all electrical equipment, Mr. Weldon violated good safety practice and weakened his safety program. He also left himself open to personal liability in case there was an accident in his absence.

4. For this class period, Ms. Barnes seems to have ignored all concerns about the safety of her more capable students. It is her responsibility to verify each student's ability to use the table saw or any other laboratory equipment. More important, it is her responsibility to keep up-to-date records of all safety instruction. It is poor practice to depend solely on students to keep records of instruction.

   If she had a record of the safety instruction provided, Ms. Barnes could have gone directly to her records to determine whether the two students were ready to use the table saw safely. Additionally, she should have made some provision to supervise their activity, regardless of their advanced work.

5. Mr. Barker's desire to keep his program current is admirable. However, it appears that he ignored the value of "obsolete" safety practices. Mr. Barker could have continued his activities, using the old safety practices, as long as his students had a strong safety awareness.

   The important point to remember is that changes in safety practices do not usually affect a strong attitude toward safety. Therefore, Mr. Barker could have continued the same safety program, confident that, with a positive safety attitude, his students would easily be able to pick up new safety skills and knowledge as they encountered them.

Level of Performance: Your completed critiques of the teachers' performance should have covered the same **major** points as the model critiques. If you missed some points or have questions about any additional points you made, review the materials in the information sheet, Providing for Student Safety Needs, pp. 6–19, or check with your resource person if necessary.

Learning Experience IV

FINAL EXPERIENCE

In an **actual teaching situation,*** provide for student safety.

As you conduct your teaching activities, provide for the safety needs of students. This will include—

- inspecting your vocational facilities to make sure that all safety conditions and practices meet applicable federal, state, and local standards
- selecting, modifying, or developing a lesson plan that includes the use of a manipulative skill demonstration
- presenting the manipulative skill demonstration, emphasizing appropriate safety practices, to a class you are responsible for teaching
- supervising your class in performing the skill safely
- keeping a record of the safety instruction you provide for your students

NOTE: Due to the nature of this experience, you will need to have access to an actual teaching situation over an extended period of time (e.g., one to six weeks).

Your resource person may want you to submit your written lesson plan to him/her for evaluation before you present your lesson. It may be helpful for your resource person to use the TPAF from Module B–4, *Develop a Lesson Plan*, to guide his/her evaluation.

Arrange in advance to have your resource person examine your facility, review your record of safety instruction, and observe your lesson presentation.

Your total competency will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 47–48.

Based upon the criteria specified in this assessment instrument, your resource person will determine whether you are competent in providing for student safety.

*For a definition of "actual teaching situation," see the inside back cover.

NOTES

TEACHER PERFORMANCE ASSESSMENT FORM

Provide for Student Safety (E–5)

Name _____

Date _____

Resource Person _____

Directions: Indicate the level of the teacher's accomplishment by placing an X in the appropriate box under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

	LEVEL OF PERFORMANCE					
	N/A	None	Poor	Fair	Good	Excellent
1. The teacher's vocational-technical facility meets federal, state, and local safety standards with respect to floors, aisles, lighting, ventilation, exits, and signs	☐	☐	☐	☐	☐	☐
2. The laboratory meets safety standards with regard to:						
a. fire extinguishers	☐	☐	☐	☐	☐	☐
b. machine safety guards	☐	☐	☐	☐	☐	☐
c. personal protective materials and devices	☐	☐	☐	☐	☐	☐
d. machine color codes	☐	☐	☐	☐	☐	☐
e. first aid materials	☐	☐	☐	☐	☐	☐
f. storage of liquids and flammable materials	☐	☐	☐	☐	☐	☐
g. electrical switches	☐	☐	☐	☐	☐	☐
3. During the manipulative skill demonstration, the environment was safe with respect to:						
a. the condition of tools and equipment	☐	☐	☐	☐	☐	☐
b. materials	☐	☐	☐	☐	☐	☐
c. condition of the demonstration area	☐	☐	☐	☐	☐	☐
d. placement of students	☐	☐	☐	☐	☐	☐
e. lighting and ventilation	☐	☐	☐	☐	☐	☐
4. The teacher used safety practices appropriate to performing the skill	☐	☐	☐	☐	☐	☐
5. The teacher used appropriate working apparel	☐	☐	☐	☐	☐	☐
6. The teacher asked students questions about the safety aspects of the demonstration	☐	☐	☐	☐	☐	☐
7. The teacher encouraged safety questions from students	☐	☐	☐	☐	☐	☐

	N/A	None	Poor	Fair	Good	Excellent
8. The teacher orally reinforced safety practices with respect to:						
a. safe use of tools and equipment	☐	☐	☐	☐	☐	☐
b. wearing of proper personal protective devices	☐	☐	☐	☐	☐	☐
c. safe use of materials for the demonstration	☐	☐	☐	☐	☐	☐
d. safe preparation of clothing such as removal of ties, rolling up of long sleeves, etc.	☐	☐	☐	☐	☐	☐
9. The teacher avoided any shortcuts to safety	☐	☐	☐	☐	☐	☐
10. The teacher pointed out safety hazards associated with the manipulative skill	☐	☐	☐	☐	☐	☐
11. The teacher ensured that the students followed correctly all safety practices involved in performing the skill	☐	☐	☐	☐	☐	☐
12. The teacher maintained a record of the safety instruction provided	☐	☐	☐	☐	☐	☐

Level of Performance: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

ABOUT USING THE NATIONAL CENTER'S PBTE MODULES

Organization

Each module is designed to help you gain competency in a particular skill area considered important to teaching success. A module is made up of a series of learning experiences, some providing background information, some providing practice experiences, and others combining these two functions. Completing these experiences should **enable** you to achieve the **terminal** objective in the final learning experience. The final experience in each module always requires you to demonstrate the skill in an actual teaching situation when you are an intern, a student teacher, an inservice teacher, or occupational trainer.

Procedures

Modules are designed to allow you to individualize your teacher education program. You need to take only those modules covering skills that you do not already possess. Similarly, you need not complete any learning experience within a module if you already have the skill needed to complete it. Therefore, before taking any module, you should carefully review (1) the introduction, (2) the objectives listed on p. 4, (3) the overviews preceding each learning experience, and (4) the final experience. After comparing your present needs and competencies with the information you have read in these sections, you should be ready to make one of the following decisions:

- That you do not have the competencies indicated and should complete the entire module
- That you are competent in one or more of the enabling objectives leading to the final learning experience and, thus, can omit those learning experiences
- That you are already competent in this area and are ready to complete the final learning experience in order to "test out"
- That the module is inappropriate to your needs at this time

When you are ready to complete the final learning experience **and** have access to an actual teaching situation, make the necessary arrangements with your resource person. If you do not complete the final experience successfully, meet with your resource person and arrange to (1) repeat the experience or (2) complete (or review) previous sections of the module or other related activities suggested by your resource person before attempting to repeat the final experience.

Options for recycling are also available in each of the learning experiences preceding the final experience. Any time you do not meet the minimum level of performance required to meet an objective, you and your resource person may meet to select activities to help you reach competency. This could involve (1) completing parts of the module previously skipped, (2) repeating activities, (3) reading supplementary resources or completing additional activities suggested by the resource person, (4) designing your own learning experience, or (5) completing some other activity suggested by you or your resource person.

Terminology

Actual Teaching Situation: A situation in which you are actually working with and responsible for teaching secondary or postsecondary vocational students or other occupational trainees. An intern, a student teacher, an inservice teacher, or other occupational trainer would be functioning in an actual teaching situation. If you do **not** have access to an actual teaching situation when you are taking the module, you can complete the module **up to** the final learning experience. You would then complete the final learning experience later (i.e., when you have access to an actual teaching situation).

Alternate Activity or Feedback: An item that may **substitute** for required items that, due to special circumstances, you are unable to complete.

Occupational Specialty: A specific area of preparation within a vocational service area (e.g., the service area Trade and Industrial Education includes occupational specialties such as automobile mechanics, welding, and electricity.

Optional Activity or Feedback: An item that is not required but that is designed to **supplement** and enrich the required items in a learning experience.

Resource Person: The person in charge of your educational program (e.g., the professor, instructor, administrator, instructional supervisor, cooperating/supervising/classroom teacher, or training supervisor who is guiding you in completing this module).

Student: The person who is receiving occupational instruction in a secondary, postsecondary, or other training program.

Vocational Service Area: A major vocational field: agricultural education, business and office education, marketing and distributive education, health occupations education, home economics education, industrial arts education, technical education, or trade and industrial education.

You or the Teacher/Instructor: The person who is completing the module.

Levels of Performance for Final Assessment

N/A: The criterion was not met because it was **not applicable** to the situation.

None: No attempt was made to meet the criterion, although it was relevant.

Poor: The teacher is unable to perform this skill or has only **very limited ability** to perform it.

Fair: The teacher is unable to perform this skill in an acceptable manner but has **some ability** to perform it.

Good: The teacher is able to perform this skill in an **effective** manner.

Excellent: The teacher is able to perform this skill in a **very effective** manner.

Titles of the National Center's Performance-Based Teacher Education Modules

Category A: Program Planning, Development, and Evaluation

- A-1 Prepare for a Community Survey
- A-2 Conduct a Community Survey
- A-3 Report the Findings of a Community Survey
- A-4 Organize an Occupational Advisory Committee
- A-5 Maintain an Occupational Advisory Committee
- A-6 Develop Program Goals and Objectives
- A-7 Conduct an Occupational Analysis
- A-8 Develop a Course of Study
- A-9 Develop Long-Range Program Plans
- A-10 Conduct a Student Follow-Up Study
- A-11 Evaluate Your Vocational Program

Category B: Instructional Planning

- B-1 Determine Needs and Interests of Students
- B-2 Develop Student Performance Objectives
- B-3 Develop a Unit of Instruction
- B-4 Develop a Lesson Plan
- B-5 Select Student Instructional Materials
- B-6 Prepare Teacher-Made Instructional Materials

Category C: Instructional Execution

- C-1 Direct Field Trips
- C-2 Conduct Group Discussions, Panel Discussions, and Symposiums
- C-3 Employ Brainstorming, Buzz Group, and Question Box Techniques
- C-4 Direct Students in Instructing Other Students
- C-5 Employ Simulation Techniques
- C-6 Guide Student Study
- C-7 Direct Student Laboratory Experience
- C-8 Direct Students in Applying Problem-Solving Techniques
- C-9 Employ the Project Method
- C-10 Introduce a Lesson
- C-11 Summarize a Lesson
- C-12 Employ Oral Questioning Techniques
- C-13 Employ Reinforcement Techniques
- C-14 Provide Instruction for Slower and More Capable Learners
- C-15 Present an Illustrated Talk
- C-16 Demonstrate a Manipulative Skill
- C-17 Demonstrate a Concept or Principle
- C-18 Individualize Instruction
- C-19 Employ the Team Teaching Approach
- C-20 Use Subject Matter Experts to Present Information
- C-21 Prepare Bulletin Boards and Exhibits
- C-22 Present Information with Models, Real Objects, and Flannel Boards
- C-23 Present Information with Overhead and Opaque Materials
- C-24 Present Information with Filmstrips and Slides
- C-25 Present Information with Films
- C-26 Present Information with Audio Recordings
- C-27 Present Information with Televised and Videotaped Materials
- C-28 Employ Programmed Instruction
- C-29 Present Information with the Chalkboard and Flip Chart
- C-30 Provide for Students' Learning Styles

Category D: Instructional Evaluation

- D-1 Establish Student Performance Criteria
- D-2 Assess Student Performance: Knowledge
- D-3 Assess Student Performance: Attitudes
- D-4 Assess Student Performance: Skills
- D-5 Determine Student Grades
- D-6 Evaluate Your Instructional Effectiveness

Category E: Instructional Management

- E-1 Project Instructional Resource Needs
- E-2 Manage Your Budgeting and Reporting Responsibilities
- E-3 Arrange for Improvement of Your Vocational Facilities
- E-4 Maintain a Filing System
- E-5 Provide for Student Safety
- E-6 Provide for the First Aid Needs of Students
- E-7 Assist Students in Developing Self-Discipline
- E-8 Organize the Vocational Laboratory
- E-9 Manage the Vocational Laboratory
- E-10 Combat Problems of Student Chemical Use

Category F: Guidance

- F-1 Gather Student Data Using Formal Data-Collection Techniques
- F-2 Gather Student Data Through Personal Contacts
- F-3 Use Conferences to Help Meet Student Needs
- F-4 Provide Information on Educational and Career Opportunities
- F-5 Assist Students in Applying for Employment or Further Education

Category G: School–Community Relations

- G-1 Develop a School–Community Relations Plan for Your Vocational Program
- G-2 Give Presentations to Promote Your Vocational Program
- G-3 Develop Brochures to Promote Your Vocational Program
- G-4 Prepare Displays to Promote Your Vocational Program
- G-5 Prepare News Releases and Articles Concerning Your Vocational Program
- G-6 Arrange for Television and Radio Presentations Concerning Your Vocational Program
- G-7 Conduct an Open House
- G-8 Work with Members of the Community
- G-9 Work with State and Local Educators
- G-10 Obtain Feedback about Your Vocational Program

Category H: Vocational Student Organization

- H-1 Develop a Personal Philosophy Concerning Vocational Student Organizations
- H-2 Establish a Vocational Student Organization
- H-3 Prepare Vocational Student Organization Members for Leadership Roles
- H-4 Assist Vocational Student Organization Members in Developing and Financing a Yearly Program of Activities
- H-5 Supervise Activities of the Vocational Student Organization
- H-6 Guide Participation in Vocational Student Organization Contests

Category I: Professional Role and Development

- I-1 Keep Up to Date Professionally
- I-2 Serve Your Teaching Profession
- I-3 Develop an Active Personal Philosophy of Education
- I-4 Serve the School and Community
- I-5 Obtain a Suitable Teaching Position
- I-6 Provide Laboratory Experiences for Prospective Teachers
- I-7 Plan the Student Teaching Experience
- I-8 Supervise Student Teachers

Category J: Coordination of Cooperative Education

- J-1 Establish Guidelines for Your Cooperative Vocational Program
- J-2 Manage the Attendance, Transfers, and Terminations of Co-Op Students
- J-3 Enroll Students in Your Co-Op Program
- J-4 Secure Training Stations for Your Co-Op Program
- J-5 Place Co-Op Students on the Job
- J-6 Develop the Training Ability of On-the-Job Instructors
- J-7 Coordinate On-the-Job Instruction
- J-8 Evaluate Co-Op Students' On-the-Job Performance
- J-9 Prepare for Students' Related Instruction
- J-10 Supervise an Employer–Employee Appreciation Event

Category K: Implementing Competency-Based Education (CBE)

- K-1 Prepare Yourself for CBE
- K-2 Organize the Content for a CBE Program
- K-3 Organize Your Class and Lab to Install CBE
- K-4 Provide Instructional Materials for CBE
- K-5 Manage the Daily Routines of Your CBE Program
- K-6 Guide Your Students Through the CBE Program

Category L: Serving Students with Special/Exceptional Needs

- L-1 Prepare Yourself to Serve Exceptional Students
- L-2 Identify and Diagnose Exceptional Students
- L-3 Plan Instruction for Exceptional Students
- L-4 Provide Appropriate Instructional Materials for Exceptional Students
- L-5 Modify the Learning Environment for Exceptional Students
- L-6 Promote Peer Acceptance of Exceptional Students
- L-7 Use Instructional Techniques to Meet the Needs of Exceptional Students
- L-8 Improve Your Communication Skills
- L-9 Assess the Progress of Exceptional Students
- L-10 Counsel Exceptional Students with Personal–Social Problems
- L-11 Assist Exceptional Students in Developing Career Planning Skills
- L-12 Prepare Exceptional Students for Employability
- L-13 Promote Your Vocational Program with Exceptional Students

Category M: Assisting Students in Improving Their Basic Skills

- M-1 Assist Students in Achieving Basic Reading Skills
- M-2 Assist Students in Developing Technical Reading Skills
- M-3 Assist Students in Improving Their Writing Skills
- M-4 Assist Students in Improving Their Oral Communication Skills
- M-5 Assist Students in Improving Their Math Skills
- M-6 Assist Students in Improving Their Survival Skills

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- Performance-Based Teacher Education: The State of the Art, General Education and Vocational Education

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